

ABSTRACT OF THE DISCLOSURE

Systems for providing a temperature detecting circuit includes seven transistors and six resistors. In a preferred embodiment, one of the seven transistors is
5 configured as an enabling element and the others form two comparators. The six resistors form three voltage dividers with output varying based upon changing temperature. Two comparators are included that sense the difference between the outputs of two of the voltage dividers, and generate a
10 corresponding 2-bit detection signal by which the refresh period is determined. Other systems and methods are also provided.